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THE ROLE OF NON-GOVERNMENTAL PROFESSIONAL/TECHNICAL ASSOCIATIONS AND ORGANIZATIONS IN CLEANER PRODUCTION*

Prepared by

the International Union of Technical Associations and Organizations (UATI)

*The views expressed in the present document are those of the authors and do not necessarily reflect the views of the UNIDO Secretariat. This document has not been edited.

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Preface

The International Union of Technical Associations and Organizations (UATI) was created on 2 March 1951 at the initiative of UNESCO and enjoys consultative status with UNIDO. Its mission is to bring together non-governmental international technical associations and professional organizations operating on an international scale.

UATI coordinates the activities of its member associations and facilitates relations between these associations and the United Nations organizations. It promotes industrial manpower development and exchange of technical studies and information.

UATI functions like an "umbrella" organization. Its orientations are set out by its technical committees, of which there are six (Environment, Advanced Techniques, Technical and Economic Development, University-Industry, Communication and public works). Each technical committee includes several working groups responsible for studying and setting concrete projects; their lifetime varies according to their objectives.

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I. THE ROLE OF PROFESSIONAL/TECHNICAL NGOS IN INDUSTRY

1. The role of Professional/technical NGOs, as outlined by the role of UATI or its member associations, is to promote technologies, to lend its support to large-scale programmes, to conduct demonstration projects followed by full-scale projects, to mobilize the technical potential of its members in order to launch projects concerning the sustainable development of countries for the benefit of the populations therein.

2. Professional/technical NGOs are also a forum for meetings and exchanges among the scientific communities, universities and high-level engineering schools, engineers and industrialists. They are attentive to the needs and proposals emanating not only from the United Nations organizations and its member organizations but also from external bodies: States, through their ministries (Industry, Health, Environment); universities, through their own committees, such as the Industry/University Committee; associations, from both industry and civil society.

3. The role of a Professional/technical Organization, as an NGO, is therefore to ensure that every aspect of each problem is taken into consideration, free of any vested interest. This is fundamental in environmental matters, within a growth-oriented policy, to make sure that there is no formal contradiction between a liberal line of thought and an interventionist line of thought. It is important, however, that an environment-oriented economic logic be determined and firmly established in development choices at a world-wide level, so as to enable governments to integrate them into their structures.

4. In the case of UATI, its thirty-one Member Associations work in a similar way with their own working groups in order to bring about concrete achievements in this or that sector. The advantage of this way of operating is that, for a given subject and at a given level, industrialists, laboratory workers, researchers and engineers can get together in a common process of reflection, thus making it possible to pose the problem correctly, look for the most suitable solution, analyze it and possibly test it and then set out the terms of reference for its implementation.

5. Some associations, because of their specialized membership, have come to be poles of expertise, and they act as focal points where preoccupations of all kinds converge, providing an opportunity to study common problems, to search for solutions applicable to all, or at least transposable, and to exchange information in an atmosphere of trust and cooperation. We have the example of one such association, concerned with energy saving problems, which comprises 1400 experts and some 80 research committees and groups of experts.

A. The role of NGOs in Environmental Management and Pollution Control

6. Professional/technical NGOs have both the knowledge and the ability to contribute to the development of Environmental Management and Pollution Control Systems and of the necessary production tools, as well as to the dissemination of that knowledge and to the corresponding technology transfer. Their technical expertise is also required to adapt know-how to the different socio-economic conditions for its transfer to developing countries.

7. At the policy level, the mission of these NGOs is not to decide on the regulations but to put forward recommendations based on scientific and state of the art technologies.

8. For the development of Environmental Management programmes, they have at their disposal experts of high-quality and wide experience to implement simple methodologies following the classical procedure: an audit, a progamme of action, a basic guide document containing recommendations, a training programme and assessment procedures.

(a) The audit

Once a particular problem of industrial pollution has been well defined at company level, the audit cannot simply content itself with solving it. It must also tackle the problems up- and downstream of the production process. The upstream part consists of raw materials and components; the downstream part is represented by the products;and the whole transformation system operates -- thanks to energy and consumable fluids. This transformation process results in solid, liquid and gaseous waste; however, explaining, for example, that a better combustion yield can improve certain waste products is not always easy and can be misunderstood, whereas it is in fact beneficial from all points of view -- lower energy consumption, lower costs, less polluting waste.

(b) The programme of action

The diagnosis established following the audit should enable the major issues to be identified, in particular the managerial issues, and bring an awareness of the importance of interaction between the different activities for the protection of the environment. The programme of action that is then drawn up should list the actions to be undertaken, establish priorities, formalize orientations and define the different stages of the actions to be taken to control environmental problems.

(c) The guide

The process will then involve producing a guide document describing the practices and measures to be implemented at the organizational level for cleaner production and at the managerial level to ensure the protection of the environment.

(d) The training programme

Once the objectives have been defined, the priorities selected and the hierarchy of technical means well established, a training programme can be drawn up. It is important that the programme should involve as many members of the company's staff as possible so as to ensure the best possible dissemination of knowledge on

protection of the environment based, in particular, on on-site experiments and analyses and on managerial concepts in the field of environmental protection.

(e) The assessment procedures

Finally, assessment procedures must be established in order to ensure that all the actions, both technical and managerial, have in fact been implemented and that the measures undertaken really do correspond to the objectives set.

9. Direct appeal to corrective actions, commonly noted as end-of-pipe treatments, have been the major response to pollution control in the past. Present procedures for permanent assessment will help to encourage the preventive approach of cleaner industrial production.

10. Identification of pollution sources is obtained through regular measuring of the typical environmental parameters. It is important, however, that the instruments for carrying out such measurements should be developed and improved in order to qualify manufacturing processes over time. In this way, the company's environmental management approach should develop with the emergence of a "Mr. Environment", alongside "Mr. Security" and "Mr. Quality".

11. The problem is not posed in the same terms in large companies as it is in small or even medium-sized firms. Whereas in the former there is a "Mr. Environment" who deals with the environmental management of the company, the same is not true in small firms because of their size. Without actually disregarding the problems, they do not pay sufficient attention to them. NGOs must, therefore, increase their capacity in order to be able to also target such firms. Of course, small-company managers do attend technical exhibitions and participate in congresses, but this is not sufficient to question their manufacturing processes.

12. Technical associations, like ours, have followed this line of action in environmental management many times, and it has always served as an example and an encouragement for other firms to follow suit and to benefit in the same way.

13. Thus, it is normal in a certain number of industrial sectors (for example in energy, smelting works, glass works) to hold seminars (some of them roving), technical exhibitions, colloquiums, congresses, clubs, and factory visits, all devoted to the quality of the environment and to cleaner production (see annex).

B. The role of NGOs in cleaner production: preventive action

14. The investment needed for corrective action is contributing to accelerating the design of new manufacturing facilities intended for the implementation of more eco-efficient industrial processes.

15. But the lessons and experience drawn from such corrective actions rarely produce miracles, and it is essentially up to researchers and laboratories, with infinitely greater technical and financial means than those available to NGOs, to bring about radical

technological change leading to in-depth modifications in manufacturing methods that result in significant environmental gains.

16. Nevertheless, the Professional/technical NGOs can contribute towards facilitating the eventual adoption of new manufacturing processes by developing a global managerial approach whereby questions of quality, savings in energy and raw materials, waste minimization -- especially of hazardous waste -- as well as productivity improvement and working conditions can successfully be addressed.

17. The fact that research on, and the design of, new manufacturing processes -- it seems that no significant progress is expected for about 10 years -- is currently carried out by big industrial groups means that the application of any new process is limited to those companies that are able to acquire the patents for them. The Professional/technical NGOs do not have the direct means with which to help firms in this respect, except perhaps in negotiating such patents. Indirect action is taken through updating skills and/or knowledge of the professionals that have joined such Professional/technical NGOs. Also through the cooperation with universities, providing them with information on the needs for applied research.

18. Until these new manufacturing processes replace the present factories, cleaner production must be intensively applied in existing facilities. A clear role exists for Professional/technical NGOs in many aspects starting from knowledge transfer.

II. LIMITS TO CLEANER PRODUCTION

19. The limitations for action in cleaner production are not in the role that Professional/technical NGOs can play, but are essentially of a financial nature. When a project has been studied and in-depth, technical and economical feasibility studies have been prepared, it is possible to look for and obtain funding. If, however, an audit is to be made, which as we have seen involves the presence of high-level experts, the Professional/technical NGOs, like small firms, find themselves incapable of undertaking such a survey owing to lack of funding. Furthermore, NGOs wishing to associate representatives from developing countries with their working groups do not have sufficient financial means with which to cover their travel expenses; and there are also institutional limits.

20. Environmental problems must be approached differently in different countries, according to their wealth and to their environmental regulations. The size and dispersion of firms make it necessary for NGOs to approach problems differently. There is not always an appropriate national structure they can use to persuade a company manager that cleaner production does not necessarily mean more expensive production. Furthermore, Professional/technical NGOs sometimes experience difficulty in obtaining help, either from government authorities or national research and teaching bodies, to select a firm to become the reference firm. Once selected however, this pilot industry would have the advantage of being able to set up a training programme adapted to the newly-introduced techniques as well as a new approach to sales, in particular by developing exports.

21. Another limitation can come from the fact that NGOs in the South may have a different approach to environmental issues from those in the North; what the latter considers to be waste can for the former be called a resource, in particular in the case of urban waste management and the agro-industry.

III. PROPOSALS TO OVERCOME MANAGERIAL AND TECHNOLOGICAL BARRIERS

22. The following proposals could be instrumental in overcoming managerial and technological barriers in the implementation of the concept of cleaner production:

a) For Professional/technical NGOs to participate in actions to promote awareness of the concept of cleaner industrial production and in demonstration projects. For this, roving seminars can be very useful if they are organized in close collaboration with the relevant local authorities who take responsibility for operation follow-up.

b) To lend support to the creation and development of cleaner production centres, backed by UNEP/UNIDO.

c) To encourage the pooling of data banks set up by national and international technical associations in all major branches of industry (via Internet, for example).

d) To assist in the general dissemination of recommendations on cleaner production at international congresses, regional seminars and national workshops organized by NGOs.

e) To facilitate NGOs access to information concerning the needs expressed both by developing countries and by economies in transition in the field of cleaner production.

f) To provide financial assistance for preliminary surveys and for travel expenses for experts from both North and South.

g) That UNIDO should pursue the establishment of a funding system to implement cleaner production and to obtain greater flexibility in lending conditions for firms that have made the effort to meet environmental standards.

h) That UNIDO should intervene to attenuate the effects of too stringent a system of industrial ownership protection as regards developing countries.

IV. THE ROLE OF UNIVERSITIES AND TRAINING

23. Education and training play a fundamental role in the success of these in-depth behavioural and technological transformations. It is essential that the University be present in all its forms, and that closer links be established between industry and universities in general. In UATI's University-Industry Committee we have observed that such links are not only well under way but are actually accelerating, and that joint university-industry examination of the problems posed is most fruitful. We know of one example in which three years of continued effort and study have led to changes in 30% of the courses. Professors and researchers analyze the problems within companies while engineers and technicians review course curricula in order to modify and reorient them. This joint study has resulted in better oriented teaching where the theory takes all aspects of the problems into account, including their environmental dimension.

24. While student education and training ensures the future, specialized booster sessions, colloquiums, congresses and round table meetings can bring engineers and technicians up to date on the latest information and knowledge.

25. Ideally, company managers and financiers should be able to spare time to actively participate in these sessions in order to grasp all the information and gain an awareness of the irreversible significance of taking environmental issues into account.

26. This brief overview shows that Professional/technical NGOs are well aware of the fact that preventive strategies in environmental protection constitute a major element in a policy of sustainable development. Their mission is to try to change attitudes and modify behaviour, to disseminate information, to share knowledge and know-how, and to encourage the development of education and training.

27. They are ready to pursue, even to increase, their efforts in favour of education and training adapted to the specific needs of each country, insofar as they request it, and to set about defining strategies and programmes.

V. CONCLUSION

28. Industry must adopt a reasonable attitude, which is the basis for sustainable development. It must remain competitive while at the same time taking into balanced consideration economic objectives, suppliers, consumer expectations, and respect for the environment. It must be able to combine the past with the most recent technical knowledge and face up to continued population growth and increasing urbanization.

29. Professional/technical NGOs lend assistance to countries in order to ensure the development of more efficient and better balanced economic and social models. Their motto is that of Hubert Reeves:

"We must preserve industry which gives us our livelihood,
and the environment which gives us life."

Annex

SOME EXAMPLES OF CONCRETE ACTIONS IN CLEANER PRODUCTION CARRIED OUT BY UATI

Foundry Industry

A technical forum "Foundry and Environment" during the Foundry World Congress held in Sao Paulo.

Task forces on the following topics:

- Recycling of used sand by thermal, mechanical and other treatments
- General recycling possibilities for wastes in foundries

Survey of environmental problems in the various countries: waste management for which low cost solutions are being sought; odour problems, with organic volatile components leading to odour nuisances; the possible CO_2 tax.

Glass industry

Annual meetings including an intensive exchange of information on:

- New technologies for air pollution control for glass furnaces
- Furnace designs/operating conditions generating very low emission levels

Task forces directed to standardizing methods to determine flue gas emissions from glass furnaces. Round Robin tests for determination of fluoride, chloride, SO_x, NO_x, Selenium and particulate emissions have been carried out in order to validate and compare different methods.

Chemical industry

Task forces on different subjects such as:

- Decreasing the amount of waste and effluent by first treating toxic releases
- Methodologies for the restorations of polluted sites
- Guide on environmental management in industry by applying the 16 principles of the charter for sustainable development established by the International Chamber of Commerce.

Energy

Inventories on technologies for a cleaner coal combustion to produce electricity.

Materials and structures used in building and civil engineering

Technical recommendations of sustainable application of mineral raw materials in construction.

Recycling of different materials.